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THE 3.3μm EMISSION FEATURE : MAP OF THE GALACTIC DISK, 10° < l < 35°, - 6° < b < 6° .

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The 3.3μm aromatic feature has been detected in the diffuse galactic emission with the AROME*** balloon borne instrument. (Giard et al., 1988, submitted to Astronomy and Astrophysics-Letters). We present here the results in the form of an (lxb) map of the 3.3μm feature's intensity.

The AROME instrument consists in a Cassegrain telescope (D = 140 mm) with wobbling secondary mirrors (fm ≈ 18 Hz, amplitude on the sky = 1.7°) and a liquid/solid nitrogen cooled photometer. The field of view is 0.52° and the feature is detected by difference of the fluxes measured in a wide (2.8μm < λ < 3.7μm) and a narrow (3.22μm < λ < 3.38μm) photometric band. The observationnal procedure is a slow azimuthal scanning (speed = 0.8°/s) at a constant elevation angle (≈ 30°). The pointing accuracy is ± 5' relative and 0.5° absolute. The instrumental noise is dominated by the photon noise of the background emission of warm optics. The rms value of the fluctuations is equivalent to a surface brightness $\lambda.I\lambda \approx 1.3\ 10^{-6}\ Wm^{-2}\ sr^{-1}$ in both bands .

The instrumental output is modified by the impulse response of the system. So the galactic surface brightness was restored in Fourier space by an inverse optimal filtering (Helstrom 1967). The map of the feature's intensity is presented in Figure 1 for the region of galactic coordinates 10° < l < 35°, -6° < b < 6°. All the known HII-giant molecular cloud complexes are visible in the 3.3μm "feature" emission showing a good correlation with the infrared dust emission. In addition to this "source"

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emission there is a diffuse galactic emission wich extends to the highest latitudes observed (b = ± 6°).

The observation of the 3.3μm feature in the galactic emission had been predicted by Puget, Léger and Boulanger (1985). It allows to identify the very small grains wich are responsible for the near and mid infrared emission of the Galaxy, to polycyclic aromatic hydrocarbons (PAHs). These molecules were first introduced by J. Platt (1956) to explain some properties of the interstellar extinction. They were recently proposed as being at the origin of the unidentified infrared bands at 3.3, 6.2, 7.7, 8.6 and 11.3 μm observed in emission in a wide variety of sources (Léger and Puget 1984, Allamandola, Tielens and Barker 1985).

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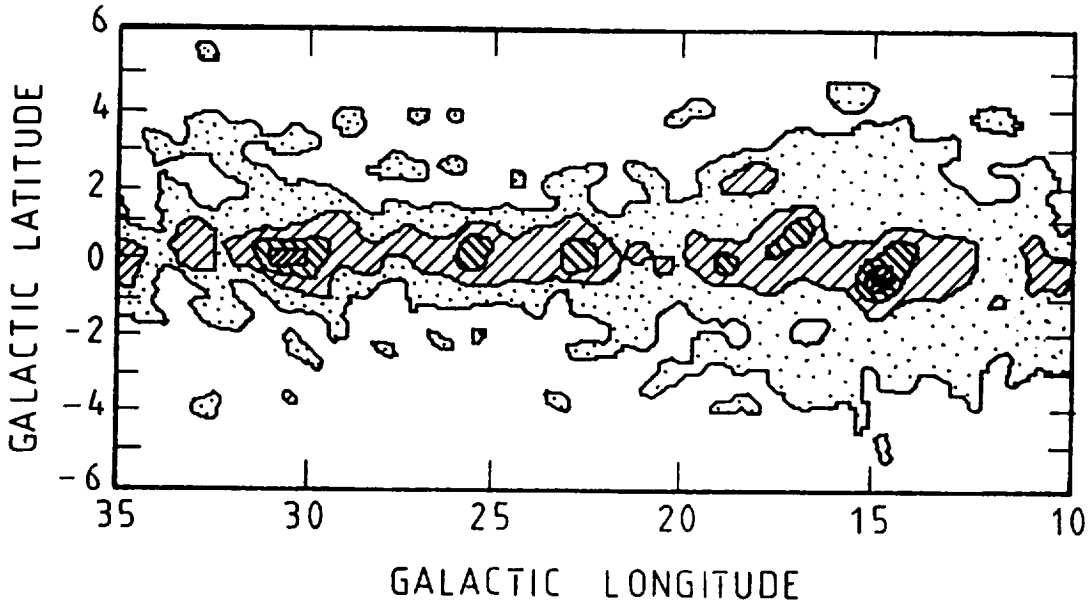

Figure 1: Isophote map of the 3.3μm feature's intensity in galactic coodinates. The resolution is (Δlx Δb)=(0.74°x0.90°). The first level and the step are equal to 6 10^{-8} W/m2/sr and the r.m.s. noise fluctuation is 1.2 10^{-8} W/m2/sr.

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